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IS/ISO 7425-2 (1989): Hydraulic Fluid Power - Housings for Elastomer-Energized, Plastic-Faced Seals - Dimensions and Tolerances, Part 2: Rod Seal Housings [PGD 16: Fluid Power]



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Bhartrhari—Nitiśatakam

“Knowledge is such a treasure which cannot be stolen”

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भाग 2 छड़-सील वेशन

Indian Standard

HYDRAULIC FLUID POWER — HOUSINGS FOR
ELASTOMER-ENERGIZED, PLASTIC-FACED
SEALS — DIMENSIONS AND TOLERANCES

PART 2 ROD SEAL HOUSINGS

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BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

NATIONAL FOREWORD

This Indian Standard which is identical with ISO 7425-2 : 1989 'Hydraulic fluid power — Housings for elastomer-energized, plastic-faced seals — Dimensions and tolerances — Part 2 : Rod seal housings', issued by the International Organization for Standardization (ISO), was adopted by the Bureau of Indian Standards on the recommendations of the Basic Fluid Power Sectional Committee and approval of the Production Engineering Division Council.

The text of ISO standard has been approved as suitable for publication as Indian Standard without deviations. Certain conventions are however not identical with those used in the Indian Standards. Attention is particularly drawn to the following:

- a) Wherever the words 'International Standard' appear referring to this standard, they should be read as 'Indian Standard'.
- b) Comma (,) has been used as a decimal marker in the International Standards while in Indian Standards, the current practice is to use a point (.) as the decimal marker.

In the adopted standard, reference appears to certain International Standards for which Indian Standards also exist. The corresponding Indian Standards which are to be substituted in their place are listed below along with their degree of equivalence for the editions indicated:

<i>International Standards</i>	<i>Corresponding Indian Standards</i>	<i>Degree of Equivalence</i>
ISO 286-2 : 1988	IS 919 (Part 2) : 1993 ISO system of limits and fits : Part 2 Tables of standard tolerance grades and limit deviations for holes and shafts	Identical
ISO 3320 : 1987	IS 8208 : 1976 Sizes for cylinder bores and piston rod diameter for fluid power systems	Technically Equivalent
ISO 5598 : 1985	IS 10416 : 1992 Fluid power systems and components — Vocabulary (<i>first revision</i>)	Identical

Indian Standard

HYDRAULIC FLUID POWER — HOUSINGS FOR ELASTOMER-ENERGIZED, PLASTIC-FACED SEALS — DIMENSIONS AND TOLERANCES

PART 2 ROD SEAL HOUSINGS

1 Scope

This part of ISO 7425 specifies the dimensions and associated tolerances for a series of hydraulic cylinder rod seal housings to accommodate elastomer-energized, plastic-faced seals used in reciprocating applications.

It is not the intention of this part of ISO 7425 to stipulate details of seal design, since the manner of construction of seals varies with each manufacturer. The design and material of the seal and any incorporated anti-extrusion component are determined by conditions such as temperature and pressure.

This part of ISO 7425 applies only to the dimensional characteristics of products manufactured in accordance with this part of ISO 7425. It does not apply to their functional characteristics.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this part of ISO 7425. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this part of ISO 7425 are encouraged to investigate the possibility of applying the most recent editions of the standards listed below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 286-2 : 1988, *ISO system of limits and fits — Part 2: Tables of standard tolerance grades and limit deviations for holes and shafts*.

ISO 3320 : 1987, *Fluid power systems and components — Cylinder bores and piston rod diameters — Metric series*.

ISO 5598 : 1985, *Fluid power systems and components — Vocabulary*.

3 Definitions

For the purposes of this part of ISO 7425, the definitions given in ISO 5598 apply.

4 Letter symbols

Letter symbols used in this part of ISO 7425 are as follows:

C = axial length of the lead-in chamfer

L = axial length of the seal housing (seal groove length)

d = inside diameter of the seal housing (rod diameter)

D = outside diameter of the seal housing (groove diameter)

d_4 = clearance diameter of the rod seal housing

r = groove corner radius

$S \left(= \frac{D - d}{2} \right)$ = radial depth (cross-section) of the seal housing

5 Seal housings

5.1 General

5.1.1 An illustrated example of a typical hydraulic cylinder rod seal housing covered by this part of ISO 7425 is shown in figure 1.

NOTE — The figure is diagrammatic only and does not represent an endorsement or a recommendation of a particular housing design.

5.1.2 All sharp edges and burrs shall be removed from corners of supporting surfaces, although it should be borne in mind that these surfaces are required to provide maximum support against extrusion.

5.1.3 The seal manufacturer shall be consulted for details of housing design which are not specified in this part of ISO 7425.

5.2 Axial length

Axial lengths for the nominal rod diameters shown are given in table 2.

5.3 Radial depth

5.3.1 Radial depths are given in table 2.

NOTE — This part of 7425 includes an alternative seal housing radial depth for some rod diameters.

5.3.2 The larger radial depth (where available) shall be selected where higher stress or wider tolerances are involved; however, consultation with the manufacturer is recommended when making the appropriate selection.

6 Dimensions and tolerances

Seal housing dimensions and tolerances shall be selected from table 2.

7 Extrusion gap

7.1 The extrusion gap is determined by the difference between diameters d_4 and d and by any lack of coaxiality of the housing components.

NOTE — Maximum value is achieved when the piston rod is in contact with one side of the bearing.

7.2 It is recommended that details concerning the extrusion gap and need for any anti-extrusion devices be the subject of consultation between the housing designer and seal manufacturer.

8 Surface roughness

The requirements for the surface roughness of the components in contact with the seal are dependent on the application and

its life requirement and should be subject to agreement between manufacturer and user.

9 Lead-in chamfer

9.1 To protect the seal from damage during assembly, lead-in chamfers are required, either as an integral part of the rod end or on a separate assembly tool.

9.2 Reference shall be made to figure 1 for typical location of lead-in chamfer when these are part of the rod end.

9.3 The minimum length of lead-in chamfers, whether on the rod end or assembly tool, is given in table 1.

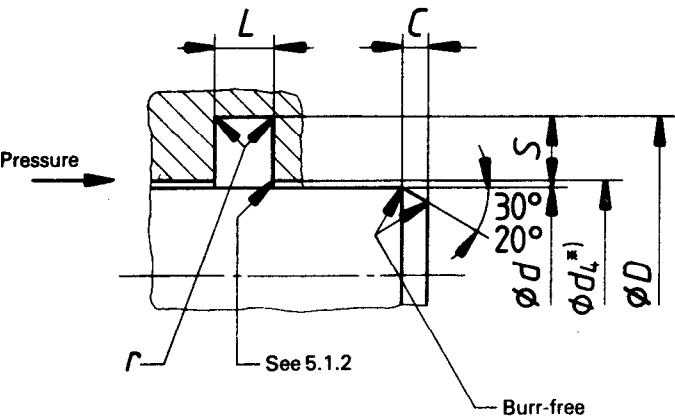
Table 1 — Lead-in chamfer

Dimensions in millimetres						
Radial depth of seal housing (cross-section), S nom.	2,5	3,75	5,5	7,75	10,5	12,25
Minimum length of chamfer, C	1,5	2	2,5	4	5	6,5

10 Identification statement (Reference to this part of ISO 7425)

Use the following statement in test reports, catalogues and sales literature when electing to comply with this part of ISO 7425:

"Dimensions and tolerances for hydraulic cylinder rod seal housings selected in accordance with ISO 7425-2, *Hydraulic fluid power — Housings for elastomer-energized, plastic-faced seals — Dimensions and tolerances — Part 2: Rod seal housings.*"



*) See clause 7.

Figure 1 — Example of rod seal housing

Table 2 — Dimensions and tolerances of seal housing

Dimensions in millimetres

Rod diameter ¹⁾ <i>d</i> f8 ²⁾	Groove diameter <i>D</i> tol.		Housing radial depth <i>S</i> nom.	Axial length <i>L</i> + 0,25 0	<i>r</i> max.		
6	11	H9 ²⁾	2,5	2,2	0,5		
8	13						
10	15						
12	17						
14	19,5		3,75	3,2			
	19		2,5	2,2			
16	21,5		3,75	3,2			
	23,5						
18	25,5						
20	27,5					5,5	4,2
	31						
22	29,5		3,75	3,2			
	33		5,5	4,2			
25	32,5		3,75	3,2			
	36		5,5	4,2			
28	39						
32	43						
36	47						
40	51		7,75	6,3			
45	56						
50	61						
56	67					5,5	4,2
	71,5						
63	74		7,75	6,3			
	78,5	5,5	4,2				
70	85,5	7,75	6,3				
80	95,5						
90	105,5						
100	115,5						
110	125,5	H8 ²⁾	10,5	8,1			
125	140,5						
140	155,5						
160	175,5				7,75	6,3	
	181						
180	195,5		10,5	8,1			
	201						
200	221				12,25		
220	241						
250	271						
280	304,5						
320	344,5						
360	384,5						

1) Bore diameters in accordance with ISO 3320.

2) See ISO 286-2.

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Amendments are issued to standards as the need arises on the basis of comments. Standards are also reviewed periodically; a standard along with amendments is reaffirmed when such review indicates that no changes are needed; if the review indicates that changes are needed, it is taken up for revision. Users of Indian Standards should ascertain that they are in possession of the latest amendments or edition by referring to the latest issue of 'BIS Handbook' and 'Standards Monthly Additions'.

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Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

BUREAU OF INDIAN STANDARDS

Headquarters:

Manak Bhavan, 9 Bahadur Shah Zafar Marg, New Delhi 110002
Telephones : 331 01 31, 331 13 75

Telegrams : Manaksanstha
(Common to all offices)

Regional Offices :

Telephone

Central : Manak Bhavan, 9 Bahadur Shah Zafar Marg
NEW DELHI 110002

{ 331 01 31
331 13 75

Eastern : 1/14 C. I.T. Scheme VII M, V. I. P. Road, Maniktola
CALCUTTA 700054

{ 37 84 99, 37 85 61
37 86 26, 37 86 62

Northern : SCO 335-336, Sector 34-A, CHANDIGARH 160022

{ 60 38 43
60 20 25

Southern : C. I. T. Campus, IV Cross Road, MADRAS 600113

{ 235 02 16, 235 04 42
235 15 19, 235 23 15

Western : Manakalaya, E9 MIDC, Marol, Andheri (East)
BOMBAY 400093

{ 632 92 95, 632 78 58
632 78 91, 632 78 92

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